

Information About Thermometers and Temperature Monitoring:
Ensuring the Efficacy of Your Vaccine

THERMOMETERS

Keep vaccine at the proper temperature at all times!

In order to ensure that the refrigerator and freezer are maintaining proper temperatures, each unit should have a thermometer. Visually check thermometers twice a day, once in the morning and once in the evening, and record those temperatures on a log regardless of the type of thermometer used.

This is the most effective method of identifying inconsistent or fluctuating temperatures in a refrigerator/freezer. Thermometers provide the most useful information about actual storage temperatures and can alert you to possible equipment malfunctions.

There are many different types of thermometers. Any of the following thermometers are adequate for recording temperatures of your refrigerator and freezer. Certified and calibrated thermometers are recommended:

Standard Fluid Filled: very easy to see and read temperature.

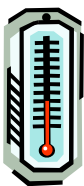
Dial: most common, but not the most accurate.

Minimum/Maximum: tells the highest and lowest temperatures reached, but can be difficult to read.

Digital: very easy to read and some come with an alarm, but the temperature probe must be placed in the proper location inside the unit in order to get an accurate reading.

Continuous Reading or Tempscribe: will record the temperature inside the unit at all times, 24 hours a day, on a sheet of paper, but the paper must be changed when it is running low. Using this thermometer is the most effective method of tracking the refrigerator/freezer temperature over time.

Thermometers – “Certified”



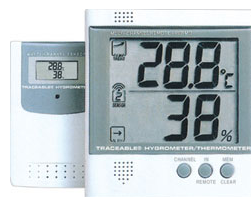
Standard Fluid



Dial



Minimum/Maximum



Digital



Continuous Reading
Tempscribe

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CDC Slides from January 2006, VPD Class

<http://www.cdc.gov/nip/ed/vpd2006/Slides/vax-s&h-images.ppt> Slide #9 "Certified Calibrated Thermometers"

CDC NIP Storage & Handling Tool Kit

<http://www2a.cdc.gov/nip/isd/sh toolkit/splash.html> (links to online version)

page 12 in Chapter 4: Daily Maintenance Tasks - CHECK THE INTERNAL TEMPERATURE: "The temperature inside each compartment of the vaccine storage unit must be checked with a certified calibrated thermometer at least twice each day..."

Immunize. Org – Ask the Experts section*

<http://www.immunize.org/catg.d/p2021f.htm> from "Ask the Experts" (last updated 10/05; Editor's note: "The Coalition thanks medical epidemiologists William L. Atkinson, MD, MPH, and Andrew T. Kroger, MD, MPH, both of the National Immunization Program, Centers for Disease Control and Prevention, for answering the following questions for our readers.")

What type of thermometer is good for measuring temperatures in a vaccine storage unit?

The National Immunization Program recommends a certified calibrated thermometer in each compartment (refrigerator and freezer). While all thermometers are calibrated during manufacturing, certified calibrated thermometers undergo a second individual calibration against a reference standard from an appropriate agency. They are then given a certificate indicating successful completion of this process. The certificate is provided with the instrument when purchased and is different from the manufacturer's warranty.

Can we buy these types of thermometers at a hardware store?

No. You will need to purchase them through a scientific supply company or other specialized vendor. Your state immunization program may be able to refer you to some suppliers. Be sure to look for a thermometer with a "traceable certificate," usually to a National Institute of Standards and Technology (NIST) or American Society for Testing and Materials (ASTM) standard. These thermometers may cost a bit more than the average hardware store thermometer, but it is better to invest in a more reliable model than to risk damaging thousands of dollars worth of vaccine because of inaccurate readings.

Other Info Regarding "Certified" Thermometers

Explanation: If a thermometer is **certified** this means that after the instrument is manufactured, it is once again individually calibrated against a reference standard at a specific point or points along the scale. The results of this special second calibration are recorded on an official report/certificate from the manufacturer. This report/certificate accompanies the certified thermometer when purchased.

<http://www2.cdc.gov/nip/isd/spoxvsh/01020108.asp>

gives info regarding:

- different thermometers, their pros & cons;
- internet resources (including manufacturers);
- definition Certified Calibrated Thermometer - "A thermometer calibrated using the reference standard calculated by the American National Standards Institute (ANSI). [Certified calibrated thermometers](#) are recommended by the NIP."
- certification standards & agencies